PATENT
Attorney Docket No.: K35A1302

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: RALPH H. CASTRO et al. Application No.: 10/627,512 Filed: September 25, 2003 For: RANGE-BASED CACHE CONTROL SYSTEM AND METHOD	) Group Art Unit: 2187)) Examiner: Peugh, Brian R.)))))))))

DECLARATION OF RALPH H. CASTRO
SWEARING BEHIND REFERENCE
(37 CFR § 1.131)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Ralph H. Castro, hereby declare as follows:

1. I am a joint inventor in parent application number 09/552,399 (the "Parent Application"), now patent number 6,601,137, and I am a joint inventor in this continuation application number 10/627,512 (the "Continuation Application") which claims priority to the Parent Application. I am making this declaration to establish facts showing that the invention claimed in this Continuation Application was reduced to practice before January 25, 2000, which I am informed is the issue date of U.S. Patent Number 6,018,789 to Sokolov et al. (the "Sokolov '789 patent"). I will hereinafter refer to January 25, 2000 as the "Effective Date" of the Sokolov '789 patent.

In re Application of: PATENT
    RALPH H. CASTRO et al.   Docket No.: K35A1302
Application No.: 10/627,512
Filed: July 25, 2003
Page 2

2. I was employed by the original assignee, Western Digital Corporation ("WDC") at WDC's Irvine facility in the State of California, during the time between my conception of the invention recited in claims 1-6, 9-14 and 17-22, which claims are being pursued in this Continuation Application, and the filing of the Parent Application.

3. I have read claims 1-6, 9-14 and 17-22 and have a technical understanding of how such claims relate to the disclosure of the Parent Application and this Continuation Application.

4. I helped develop and reduce to practice, in the United States of America, a hard disk drive having an integrated circuit to which claims 1-6, 9-14 and 17-22 apply prior to the Effective Date of the Sokolov '789 patent. This particular disk drive was called "Rebel" during its development. The Rebel disk drive, as reduced to practice, included a cache memory and a cache control system that implemented a cache method for servicing host commands. The cache memory had a plurality of memory clusters for caching disk data of disk sectors identified by logical block addresses. The cache control system had a tag memory and a scan engine. The tag memory had a plurality of tag records. Each tag record defined a variable length segment of the memory clusters for caching disk data for a range of logical block addresses and indicated the range of logical block addresses. The scan engine was only usable for scanning the tag records. The scan engine included means for receiving a range of logical block addresses associated with a host command, means for reading the ranges of logical block addresses defined by the tag records, means for comparing the range of logical block addresses associated with the host command with the ranges of logical block addresses indicated in the tag records, and means for providing scan results, based on a comparison by the means for comparing, indicating overlap between the logical block address range associated with the host command and the ranges of logical block addresses indicated in the tag records. The means for comparing further determined whether a first logical block address of a range of logical block addresses associated with a host command was within the ranges of logical block addresses indicated in the tag

In re Application of: PATENT
   RALPH H. CASTRO et al.   Docket No.: K35A1302
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Page 3

memory records. The means for providing scan results indicated the tag records, determined by the means for comparing, having a range including the first logical block address. The means for providing scan results indicated whether an entire logical block address range, a portion of the logical block address range, or none of the logical block address range associated with a host command is within the ranges of logical block addresses in the tag memory records. The means for providing scan results also indicated whether the logical block address range associated with a host command is within a range of the ranges of logical block addresses in the tag records such that a start logical block address for the host command is greater than a start logical block address for the overlapping tag record range, or whether only a portion of the logical block address range associated with a host command is within a range of the ranges of logical block addresses in the tag memory records. Further, the means for providing scan results indicated whether the portion of the logical block address range associated with a host command that is within a range of the ranges of logical block addresses in the tag records included the beginning or the end of the logical address range associated with the host command.

        5. Attached hereto as Exhibit "A" is an assembly tree of a Rebel disk drive. The Rebel disk drive included an ASSEMBLY PCB 61-600840-XXX (see arrow). The assembly tree is dated before the Effective Date of the Sokolov '789 patent (see revision dates in the upper right hand corner).

        6. Attached hereto as Exhibit "B" is a Bill of Materials Report for an ASSEMBLY PCB 61-600840-001, which includes an integrated circuit: IC WD70C10SW/I285S (see arrow on page 2).

        7. Attached hereto as Exhibit "C" are a Title page (page 1) and a select portion of a Table of Contents (pages 8-10) of a Device Specification for the integrated circuit IC WD70C10SW/I285S. The integrated circuit includes the cache control system (see arrow pointing to heading 10 on page 8) and the tag memory (see arrow pointing to heading 11 on page

In re Application of: PATENT
    RALPH H. CASTRO et al.   Docket No.: K35A1302
Application No.: 10/627,512
Filed: July 25, 2003
Page 4

9) that enable the Rebel disk drive to implement the cache method. The Device Specification is
dated before the Effective Date of the Sokolov '789 patent.

        9. This declaration factually establishes that the claimed invention was reduced to
practice in the United States before the Effective Date of the Sokolov '789 patent.

        10. I hereby declare that all statements made herein of my own knowledge are
true and that all statements made on information and belief are believed to be true; and further
that these statements are made with the knowledge that willful false statements and the like so
made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United
States Code, and that such willful false statements may jeopardize the validity of the Application
and any patent issuing thereon.

        October
Date: September *13*, 2003

Chandler, Arizona
    (city)

Ralph H. Castro

PATENT
Attorney Docket No.: K35A1302

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: RALPH H. CASTRO et al.	) Group Art Unit: 2187)) Examiner: Peugh, Brian R.
Application No.: 10/627,512	)
Filed: September 25, 2003	)
For: RANGE-BASED CACHE CONTROL SYSTEM AND METHOD	)))))

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OCT 2 2 2003

DECLARATION OF TSUN Y. NG
SWEARING BEHIND REFERENCE
(37 CFR § 1.131)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Tsun Y. Ng, hereby declare as follows:

1. I am a joint inventor in parent application number 09/552,399 (the "Parent Application"), now patent number 6,601,137, and I am a joint inventor in this continuation application number 10/627,512 (the "Continuation Application") which claims priority to the Parent Application. I am making this declaration to establish facts showing that the invention claimed in this Continuation Application was reduced to practice before January 25, 2000, which I am informed is the issue date of U.S. Patent Number 6,018,789 to Sokolov et al. (the "Sokolov '789 patent"). I will hereinafter refer to January 25, 2000 as the "Effective Date" of the Sokolov '789 patent.

        2. I was employed by the original assignee, Western Digital Corporation

("WDC") at WDC's Irvine facility in the State of California, during the time between my

conception of the invention recited in claims 1-6, 9-14 and 17-22, which claims are being

pursued in this Continuation Application, and the filing of the Parent Application.

        3. I have read claims 1-6, 9-14 and 17-22 and have a technical understanding of

how such claims relate to the disclosure of the Parent Application and this Continuation

Application.

        4. I helped develop and reduce to practice, in the United States of America, a hard

disk drive having an integrated circuit to which claims 1-6, 9-14 and 17-22 apply prior to the

Effective Date of the Sokolov '789 patent. This particular disk drive was called "Rebel" during

its development. The Rebel disk drive, as reduced to practice, included a cache memory and a

cache control system that implemented a cache method for servicing host commands. The cache

memory had a plurality of memory clusters for caching disk data of disk sectors identified by

logical block addresses. The cache control system had a tag memory and a scan engine. The tag

memory had a plurality of tag records. Each tag record defined a variable length segment of the

memory clusters for caching disk data for a range of logical block addresses and indicated the

range of logical block addresses. The scan engine was only usable for scanning the tag records.

The scan engine included means for receiving a range of logical block addresses associated with

a host command, means for reading the ranges of logical block addresses defined by the tag

records, means for comparing the range of logical block addresses associated with the host

command with the ranges of logical block addresses indicated in the tag records, and means for

providing scan results, based on a comparison by the means for comparing, indicating overlap

between the logical block address range associated with the host command and the ranges of

logical block addresses indicated in the tag records. The means for comparing further

determined whether a first logical block address of a range of logical block addresses associated

with a host command was within the ranges of logical block addresses indicated in the tag

In re Application of:
  RALPH H. CASTRO et al.
Application No.: 10/627,512
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Page 3

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     5. Attached hereto as Exhibit "A" is an assembly tree of a Rebel disk drive. The Rebel disk drive included an ASSEMBLY PCB 61-600840-XXX (see arrow). The assembly tree is dated before the Effective Date of the Sokolov '789 patent (see revision dates in the upper right hand corner).

     6. Attached hereto as Exhibit "B" is a Bill of Materials Report for an ASSEMBLY PCB 61-600840-001, which includes an integrated circuit: IC WD70C10SW/I285S (see arrow on page 2).

     7. Attached hereto as Exhibit "C" are a Title page (page 1) and a select portion of a Table of Contents (pages 8-10) of a Device Specification for the integrated circuit IC WD70C10SW/I285S. The integrated circuit includes the cache control system (see arrow pointing to heading 10 on page 8) and the tag memory (see arrow pointing to heading 11 on page

9) that enable the Rebel disk drive to implement the cache method. The Device Specification is dated before the Effective Date of the Sokolov '789 patent.

     9. This declaration factually establishes that the claimed invention was reduced to practice in the United States before the Effective Date of the Sokolov '789 patent.

     10. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the Application and any patent issuing thereon.

Date: ~~September~~ *October* *13*, 2003

     ORANGE, California
        (city)
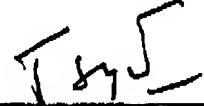
Tsun Y. Ng

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PATENT

Attorney Docket No.: K35A1302

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
   RALPH H. CASTRO et al.
 	
 Application No.: 10/627,512
 	
 Filed: September 25, 2003
 	
 For: RANGE-BASED CACHE CONTROL
     SYSTEM AND METHOD
	) Group Art Unit: 2187
	)
	) Examiner: Peugh, Brian R.
	)
	)
	)
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	)
	)

DECLARATION OF VIRGIL V. WILKINS
SWEARING BEHIND REFERENCE
(37 CFR § 1.131)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Virgil V. Wilkins, hereby declare as follows:

1. I am a joint inventor in parent application number 09/552,399 (the "Parent Application"), now patent number 6,601,137, and I am a joint inventor in this continuation application number 10/627,512 (the "Continuation Application") which claims priority to the Parent Application. I am making this declaration to establish facts showing that the invention claimed in this Continuation Application was reduced to practice before January 25, 2000, which I am informed is the issue date of U.S. Patent Number 6,018,789 to Sokolov et al. (the "Sokolov '789 patent"). I will hereinafter refer to January 25, 2000 as the "Effective Date" of the Sokolov '789 patent.

In re Application of: PATENT
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2. I was employed by the original assignee, Western Digital Corporation ("WDC")
at WDC's Irvine facility in the State of California, during the time between my conception of the
invention recited in claims 1-6, 9-14 and 17-22, which claims are being pursued in this
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In re Application f: **PATENT**
  RALPH H. CASTRO et al.   Docket No.: K35A1302
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Date: October 17, 2003

_____, California
(city)

                               Virgil V. Wilkins

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Exhibit A
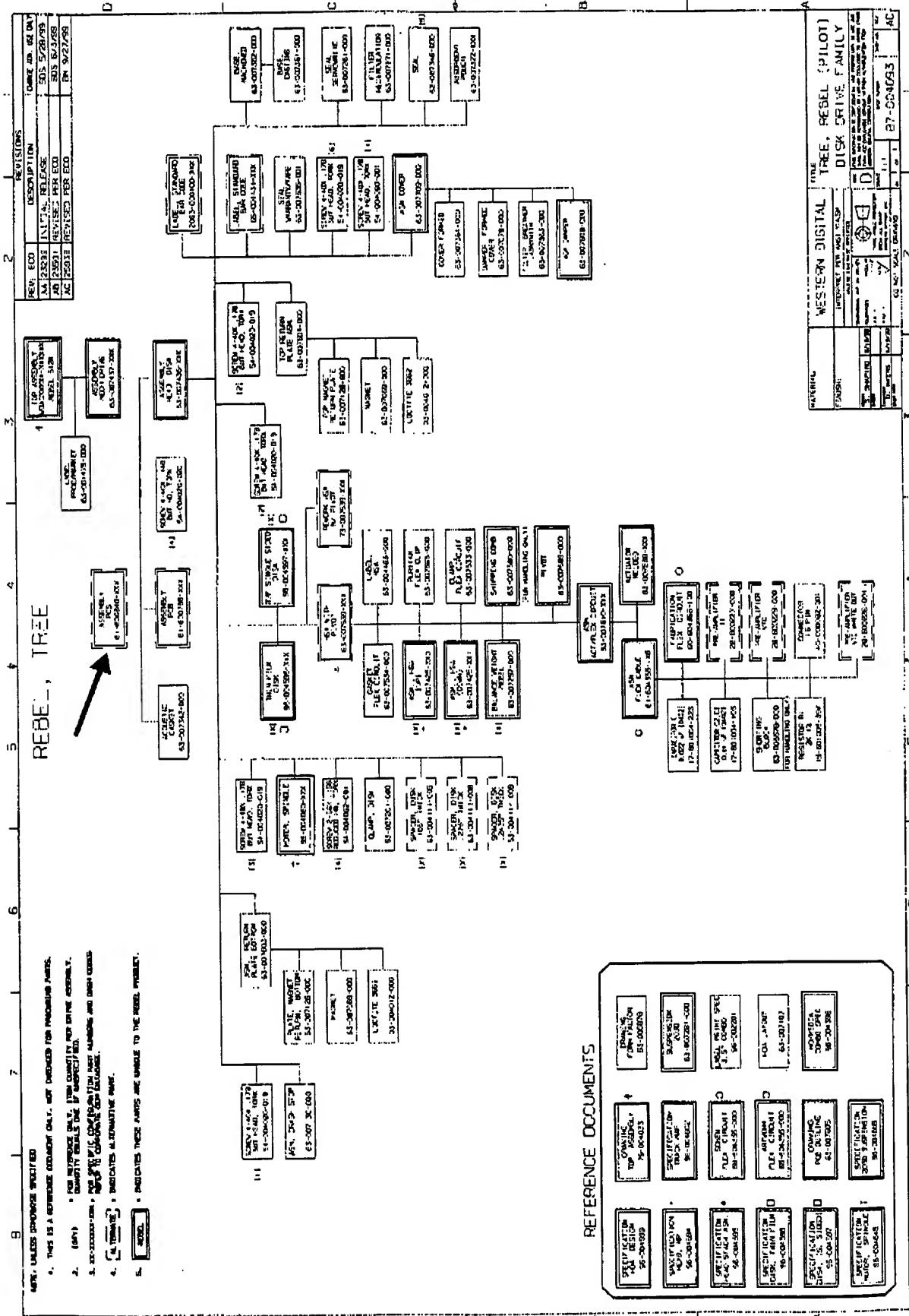
BOM Search Results　　　　　　　　**Exhibit B**　　　　　　　　　Page 1 of 3

WD Bill of Materials Report (Web)	Rep rt Dat : Sat, 15 Mar 2003 00:37:33 GMT

Item: 61-600840-001　　　　　　Rev: E as f 15-MAR-2003 00:37:34 GMT　　　　　　Org ID:WDC
Desc: PCBA, REBEL ENTEK FLASH

Seq	Item Number	Description	Rev	Qty	Ref Des
1	60-600840-000	PCB ENTEK REBEL / REBEL 2	A	1	
	60-600840-400	PCB, REBEL / REBEL 2 ENTEK 4UP PANEL		1	
	60-600840-X00	PCB, REBEL / REBEL 2 ENTEK CROSSOUT PANEL		1	
3	15-600003-000	RES CM 0.0 OHM 1/10W 0805	A	1	R22
4	15-600004-000	RES CM 0.0 OHM 1/16W 0603	A	4	R34 R38 R41 R57
8	15-600004-345	RES CM 10 OHM 5% 1/16W 0603	A	1	R21
10	15-601004-263	RES CM 80.6 OHM 1% 1/16W 0603	A	2	R12 R13
12	15-600004-357	RES CM 33 OHM 5% 1/16W 0603	A	3	R17 R39 R46
15	15-600004-363	RES CM 56 OHM 5% 1/16W 0603	A	2	R20 R37
17	15-600004-369	RES CM 100 OHM 5% 1/16W 0603	A	7	R23 R29 R3 R30 R35 R4 R40
18	15-600004-376	RES CM 200 OHM 5% 1/16W 0603	A	6	R10 R15 R16 R26 R31 R33
19	15-600004-385	RES CM 470 OHM 5% 1/16W 0603	A	2	R18 R43
20	15-600004-393	RES CM 1.0K 5% 1/16W 0603	A	2	R47 R48
23	15-600004-400	RES CM 2.0K 5% 1/16W 0603	A	3	R49 R50 R51
24	15-600004-417	RES CM 10K 5% 1/16W 0603	A	7	R1 R14 R25 R36 R45 R69 R9
26	15-600004-441	RES CM 100K 5% 1/16W 0603	A	1	R2
29	15-600004-449	RES CM 220K 5% 1/16W 0603	A	2	R5 R70
31	15-600004-489	RES CM 10M 5% 1/16W 0603	A	1	R65
33	15-601001-757	RES CM 1.50 OHM 1% 1/4W 1206	A	2	R67 R68
34	15-601004-301	RES CM 200 OHM 1% 1/16W 0603	A	1	R19
35	15-601004-416	RES CM 3.16K 1% 1/16W 0603	A	1	R64
36	15-601004-423	RES CM 3.74K 1% 1/16W 0603	A	1	R62
37	15-601004-431	RES CM 4.53K 1% 1/16W 0603	A	1	R11
39	15-601004-464	RES CM 10.0K 1% 1/16W 0603	A	1	R55
42	15-601004-560	RES CM 100K 1% 1/16W 0603	A	1	R58
43	15-601004-625	RES CM 475K 1% 1/16W 0603	A	1	R56
45	17-601002-333	CAP CER .033UF 10% X7R 0805	A	1	C49
49	17-600003-101	CAP CER 100PF 5% NPO 50V 0603	A	4	C16 C17 C30

					C51		
50	17-600003-150	CAP CER 15PF 5% NPO 50V 0603	A	2	C29	C40	
51	17-600003-181	CAP CER 180PF 5% NPO 50V 0603	A	1	C43		
52	17-600003-221	CAP CER 220pF 5% NPO 0603	A	1	C63		
53	17-600003-391	CAP CER 390pF 5% NPO 25V 0603	A	2	C32	C33	
55	17-601003-104	CAP CER 0.1UF 10% X7R 16V 0603	A	1	C62		
57	17-601003-332	CAP CER 3300PF 10% X7R 50V 0603	A	10	C11	C15	C19
					C21	C27	C28
					C34	C39	C4
					C6		
58	17-601003-154	CAP CER 0.15UF X7R 10% 10V 0603	A	1	C9		
59	17-602003-104	CAP CER 0.1UF +80-20% Y5V 25V 0603	A	19	C1	C12	C14
					C18	C2	C20
					C22	C3	C37
					C41	C42	C44
					C45	C46	C50
					C56	C58	C60
					C8		
60	17-603006-105	CAP CER 1.0UF X7R 20% 16V 1206	A	2	C31	C35	
61	19-600000-194	CAP TANT 10UF 20% 10V (A)	A	1	C57		
62	19-600000-193	CAP TANT 4.7UF 20% 10V (A)	A	1	C5		
63	19-600000-195	CAP TANT 22uF 20% 10V (B)	A	1	C47		
69	19-602000-160	CAP TANT 1.0UF 20% 35V (B)	D	1	C52		
70	19-602000-167	CAP TANT 15uF 20% 35V (D)	A	1	C48		
72	27-600099-000	IC FLASH 64K*16 35NS 44PLCC	A	1	U2		
	43-600065-001	SCKT IC 44PLCC W/O KEY .185H MAX		1			
75	27-601123-000	IC SDRAM 1M*16-10 SYNC 50TSOP	A	1	U4		
77	28-601018-000	IC LM1117B 3.3V 1.2A 2% REG DPAK	A	1	U6		
78	28-601012-000	IC 78M08 8V 2% REG D-PAK	A	1	U7		
80	29-600506-000	IC L6262 R2.4 ORCA 44TQFP	A	1	U5		
	29-600528-000	IC L6262 R2.6 ORCA 44TQFP		1			
82	29-600507-000	IC CLSH3367 R=B2 RIGEL II 100MQFP	A	1	U3		
	2029-001003-000	IC CLSH3367 R=B3 RIGEL II DPH 100MQFP		1			
	29-600508-000	IC CLSH3367DH-B2 RIGEL-2 100MQFP		1			
84	29-601226-000	IC WD70C10SW/I285S R=3.0 176TQFP	A	1	U1		
86	31-600043-000	DIODE SS14 SHKTY 1A 40V DO214M	B	1	D3		
88	32-600051-000	DIODE TVS SMB12A 12V DO214AA	A	1	D2		
89	32-600052-000	DIODE TVS SMBJ5.0 5V DO214AA	A	1	D1		
90	33-600032-000	RESN CER 25MHZ 0.3% 3T 373113	C	1	Y1		

BOM Search Results

92	39-600091-000	IND FERRITE BEAD POWER 1206	B	5	L1 L2 L3 L4 L5
93	41-001321-003	CONN PPHDR 16P2R ST HI-TEMP .045 TAIL	I	1	J1
94	42-000019-000	CONN JMPR 2P 6mmX2.54mm CTR WHT	OB	1	J8 (1-2)
	42-000018-002	CONN JMPR 2P1R .1CT ST HDL WHT		1	
95	63-006364-000	CONTACT SPRING	B	4	J11 J12 J13 J14
96	41-600042-000	CONN CENTURY 54P COMBO SMTMULT	F	1	J2 J3 J8
100	63-001303-000	LABEL BLANK 0.25 X 1.25 INCH	C	1	
101	96-001875	PCBA BARCODE PRINT SPEC.	EA	0	
105	65-600840-000	ARTWORK, REBEL / REBEL 2 ENTEK	A	0	
106	61-600840	PCBA, REBEL ENTEK DWG	A	0	
107	68-600840-000	SCHEMATIC, REBEL ENTEK	B	0	

This page took 6.301 seconds to process.

| PROJECT LEAD | |
| MGR CONTROLLER DEV | |

WD70C10

Device Specification

-

I285s x 3.0

A	WDC 23672	Initial Release	Smoraly 6/4/99
REV	ECO	DESCRIPTION	DATE

WESTERN DIGITAL
CORPORATION

WD70C10
DEVICE SPECIFICATION

DOCUMENT NUMBER
99-107010-003